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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,434	04/26/2001	Makoto Kobayashi	109352	7153

25944 7590 04/06/2004

OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320

EXAMINER

SHAKERI, HADI

ART UNIT

PAPER NUMBER

3723

DATE MAILED: 04/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Paper No. 23

Application Number: 09/830,434  
Filing Date: April 26, 2001  
Appellant(s): KOBAYASHI ET AL.

MAILED

APR 06 2004

GROUP 3700

William Berridge  
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed February 19, 2004.

(1) ***Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

(2) ***Related Appeals and Interferences***

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A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) Status of Claims**

The statement of the status of the claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Invention**

The summary of invention contained in the brief is correct.

**(6) Issues**

The appellant's statement of the issues in the brief is correct.

**(7) Grouping of Claims**

Appellant's brief includes a statement that claims 11, 12, 17, 18 and 20, Group I; claims 13 and 21, Group II; and claims 27-30, Group III do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) Claims Appealed**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) Prior Art of Record**

Applicant's Admitted Prior Art

6,004,402

CERCONE et al.

12-1999

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 11-13, 17, 18, 20, 21 and 27-30 stand rejected under 35 U.S.C. 103(a). This rejection is set forth in prior Office Action, Paper No. 20.

**(11) Response to Argument**

With regards to claims 11, 12, 17, 18 and 20, Applicant admits, e.g., on page 4, lines 8-23, that conventional polishing pads used in mirror finishing of a wafer comprise a base layer consisting of a non-woven fabric and a porous surface layer with wear resistance such as polyurethane, meeting all of the limitations of the above claims, except for the amount of zinc compounds (mainly zinc oxide, as defined by the Applicant, e.g., page 15, line 11) to be 200 ppm or less. Applicant further admits that conventional polishing pads have about 300-800 ppm of zinc relative to the weight of the pad, i.e., comparative example, page 29, line 15. Cercone et al. teaches an industrial sponge used for cleaning semiconductors and discloses that in conventional sponges particulate residues such as zinc, and fibrils resulting from cross-linking reaction in forming the pores (curing or cross-linking procedures are common in the art in hardening and strengthening the resulting polymers such as polyurethane), are trapped in the closed or dead end pockets, and that these particulate matters can come out as the material wears, which would damage the surface of the workpiece being treated, Cercone et al., col. 1, lines 25-45. Cercone et al. further teaches a process in which the pores are formed by gas to provide an open pore structure having no fibrils, and further purifying the sponge by exposure to solutions of high pH and low pH and further sterilizing the sponge by electron beam radiation to destroy micro organisms that can cause contamination of the final product, reducing residues to 2 ppm or less for many elements such as zinc, col. 2, lines 14-24. Thus it is the Examiner's position that one of ordinary skill in the art seeking to prevent micro damages on a surface of a wafer resulting from polishing utilizing the conventional pads would be motivated to modify the conventional pads by open pore structures and purification method, i.e., exposure to pH

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solutions and electron beam radiation as taught by Cercone et al. to keep the particulate metals, such as zinc and fibrils to a minimum.

The Appellant argues that first, one of ordinary skill in the art would not have been led to have combined the teachings and moreover, even if combined the present invention would not be achieved.

In response to Appellant 's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to Appellant 's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

It is true that Cercone et al. is directed to a method of cleaning a semiconductor using a purified conventional sponge which for example is made of polyvinyl acetal (col. 1, line 26), however, the specific extraction process described and the teaching of using an open pore cell is not restricted to polyvinyl acetal as is clearly disclosed on col. 7, lines 37-40, "The disclosed extraction processes can be used to purify other sponge materials, such as that of the competitive product.". In fact it is further noted that in the US Patent 4,098,728, the disclosure of which is incorporated in Cercone et al., e.g., col. 2, lines 58 and 59, one of examples of other cleaning sponges noted in col. 2, line 11, are sponges made of polyurethane. It is also the

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Examiner's position that the Appellant is not arguing or claiming a specific method of producing a polishing pad having 200 ppm zinc oxide, rather a polishing pad having 200 ppm or less zinc oxide and the teaching of Cercone et al. of reducing zinc to prevent damages caused by loose particulates would be a clear teaching to one of ordinary skill in the art, even though achieved through different procedures, to modify a polishing pad by removing zinc. It is further noted that conventional sponge or pad (Cercone et al. col. 7, line 47), as disclosed by Cercone et al. is used for cleaning or "polishing" in col. 3, line 11.

Therefore the argument that one of ordinary skill in the art would not be motivated to modify a polishing pad by purifying it and making the pores open ended to minimize particulate residue, e.g., zinc to less than 200 ppm to prevent damaging semiconductors during treatments, is not persuasive, since if residue metals can damage a wafer during cleaning, they could damage it during polishing, even if there were no disclosure regarding cleaning or polishing.

The second argument that even if the teachings were to be combined the resulting pad would not meet the limitations, since there is no teaching of getting rid off zinc oxide, it is noted that a pad modified by the teaching resulting in an amount of zinc of 2 ppm would meet the limitations, since if there is no zinc there is no compound of zinc, e.g., zinc oxide.

The argument regarding claims 13 and 21, that it requires for the polishing pads not contain zinc oxide, is clearly in error for two reasons. One as clearly indicated by specification as originally filed, e.g., claim 20, which claim 21 depends upon, the recitation of "100ppm or less" includes embodiments wherein the amount is none, therefore the prior art teaching of 2 ppm or less meets "no zinc oxide" as defined by the instant specification. Second, as clearly indicated in the Applicant's specification, for example polishing pad "E" as set forth in the Example 3, pads having no zinc compounds is defined by pads having 10ppm or less, which is again met by the prior art teachings of 2 ppm or less.

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Finally the argument regarding claims 27-30 that a method of polishing a wafer while supplying a polishing agent is not met by Cercone et al., is not persuasive since combined teachings meet the limitations, i.e., prior art method of polishing a wafer modified with a pad having 2 ppm zinc.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,




Hadi Shakeri  
Patent Examiner  
Art Unit 3723

April 2, 2004

Conferees

Joseph Hail, III 

Allan N Shoap 

OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320